

Notice of Allowability

Application No.

10/807,772

Examiner

Nikita Wells

Applicant(s)

WHITE, NICHOLAS R.

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Application filed 24 March 2004.
2. ☒ The allowed claim(s) is/are 1-16.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 030205.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Nikita Wells
Primary Examiner
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Allowable Subject Matter

1. Claims 1-16 are allowed.
2. The following is an examiner's statement of reasons for allowance:

With respect to the independent claim 1, prior art fails to disclose or make obvious, in combination with other recited features of the claim limitations, an ion implantation apparatus including a source for the generation of charged particles as an ion beam, a scanner to yield a scanned ribbon beam, a workpiece which is moved through the scanned beam, a fine-control collimator/steerer for accurate collimation and alignment of scanned beams, first and second multidetector sequence arrangements having a linear support bar, at least two coil detectors wound independently and positioned adjacently on said support bar, being wound to lie orthogonally to said support bar, and a pair of steering coils wound independently and positioned individually at each end of said support bar; whereby said steering coils become energized and generate an orthogonally extending magnetic field of limited breadth and an adjustable local magnetic potential gradient at each end of said linear support bar; a spatial channel bounded by said multidetector sequence arrangements for applying a contiguous magnetic field and a pre-selected magnetic field gradient profile to a scanned ion beam traveling therethrough, wherein the parallelism for a scanned ion beam becomes finely controlled and more accurate.

With respect to the independent claims 8 and 16, prior art fails to disclose or make obvious, in combination with other recited features of the claim limitations, a method of improving ion beam collimation in a hybrid-scan ion implantation system which includes an ion source, an analyzer magnet, a beam scanner scanning the beam within a plane, a coarse collimation device for converting the scanned beam into a parallel scanned ribbon beam, a region

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of controllable magnetic field providing an adjustable magnetic field gradient profile in a direction orthogonal to the plane at which the beam is scanned, wherein the magnetic field gradient profile can be adjusted in response to said error measurement of beam centroid direction; and, subsequently, applying said adjusted magnetic field gradient profile across the breadth of the beam such that said errors in the direction of the beam centroid are substantially eliminated relative to the plane at which the workpiece is to be implanted.

The dependent claims 2-7 and 9-15, are allowable by virtue of their dependence upon the independent claims 1 and 8, respectively.

Drawings

3. New corrected formal drawings are required in this application because the submitted drawings are not numbered consecutively starting with Figure 1 as required in 35 U.S.C. §1.84 (t). Figures A, 1A, B, 1B should be relabeled as 1, 2, 3, 4, etc. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Benveniste et al. (6,835,930 B2), V.M. Benveniste (2003/0205683 A1), and Ye et al. (6,703,628 B2) disclose an ion implantation system using a ribbon ion beam which is mass analyzed and collimated for use in implanting one or more workpieces. H.F. Glavish (5,483,077) discloses a system and method for magnetic scanning, accelerating, and implanting a ribbon ion beam.

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5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikita Wells whose telephone number is (571) 272-2484. The examiner can normally be reached on 8:30 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477. The central fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Nikita Wells, Primary Examiner
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March 2, 2005